

Reply to Office Action dated April 12, 2006

REMARKS

Claims 1, 3-22, 30, 32-42 and 45-50 are pending in this application. By this Amendment, claims 1, 18, 30, 40, 42 and 49 are amended and claims 43-44 and 51-52 are canceled without prejudice or disclaimer. Various amendments are made for clarity and are unrelated to issues of patentability.

Applicant gratefully acknowledges the Office Action's indication that claims 3-6, 8-17, 20-21 and 48 contain allowable subject matter. However, as will be described below, all claims we believe contain allowable subject matter.

The Office Action rejects various claims under 35 U.S.C. §103(a) by U.S. Patent 5,541,892 to Eyuboglu et al. (hereafter Eyuboglu) in view of U.S. Patent 5,253,041 to Wine et al. (hereafter Wine), and newly-cited U.S. Patent 6,898,243 to Alvarez either alone or in various combinations with U.S. Patent 6,621,866 to Florencio et al. (hereafter Florencio), U.S. Patent 6,058,143 to Golin, and Applicant's admitted prior art (hereafter AAPA). The rejections are respectfully traversed with respect to the pending claims.

On April 18, 2006, Examiner An confirmed that page 9 of the Office Action should have identified the Wine reference rather than the Wells reference. Applicant also respectfully submits that claims 7, 18, 19, 22, 36 and 40-41 each depend from either independent claim 1 or independent claim 30. However, the rejections of dependent claims 7, 18, 19, 22, 36 and 40-41 do not include the Alvarez reference even though the independent claims 1 and 30 are based on Alvarez. Applicant believes this is a typographic error by the Patent Office.

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Independent claim 1 recites a video pre-processing unit having a predetermined matrix structure and down-sampling a macro block decoded by the video decoder by transforming the macro block into a corresponding picture structure, wherein the video pre-processing unit carries out down-sampling through a field based processing if the data decoded in the video decoder is a frame picture in an interlacing sequence and the video pre-processing unit carries out a down-sampling through a frame based processing if the data decoded in the video decoder is a field picture structure having a sequential scanning sequence or an interlacing sequence,

The applied references do not teach or suggest at least these features of independent claim 1. More specifically, the Office Action (on page 3) states that Eyuboglu does not disclose the features of the claimed video pre-processing unit. The Office Action (on pages 3-4) then relies on Wine and Alvarez for the missing features of independent claim 1. In particular, the Office Action asserts that Alvarez teaches a video preprocessing unit carrying out down-sampling through a frame (progressive) based processing if the video data corresponds to a field picture structure having an interlacing sequence. The Office Action appears to reference Alvarez's Abstract, Fig. 1 (element 111) and Fig. 2c. However, Alvarez does not teach or suggest the alleged claimed features. More specifically, Alvarez's Fig. 2c merely shows that an interlaced frame (i.e., left-hand side of Fig. 2c) may undergo down conversion to a progressive frame (i.e., right-hand side of Fig. 2c). However, this does not teach or suggest the claimed features that are missing from the other references. That is, Alvarez's Fig. 2c does not show a frame based processing if the data decoded in the video decoder is a field picture structure having a sequential scanning sequence or an interlacing sequence. Even further, Alvarez's Fig.

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2c (i.e., left-hand side of Fig. 2c) showing an interlaced frame does not correspond to a field picture structure having a sequential scanning sequence or an interlacing sequence. Accordingly, Alvarez does not teach or suggest all the features alleged in the Office Action. The rejection should be withdrawn at least for this reason.

Independent claim 1 also recites a bit rate control unit controlling quantization of the video encoder by calculating a bit amount and the bit rate control unit determining a fullness of a buffer in the video encoder using the calculated bit amount. Independent claim 1 also recites that the bit rate control unit includes a picture bit counting unit to calculate the bit amount encoded substantially for each picture in the video bit stream that is inputted to the video decoder and to be encoded currently and the picture bit counting unit determines the fullness of the buffer in the video encoder using a target bit number, wherein the target bit number for a picture to be encoded is based on the calculated bit amount by the picture bit counting unit and the video bit stream that is variable-length-coded in the video encoder.

The Office Action (on page 3) states that the Eyuboglu does not disclose the claimed bit rate control unit. The Office Action (on page 4) then relies on Florencio as teaching the missing features of independent claim 1. Additional features of amended independent claim 1 correspond to features recited in previous dependent claim 18, for example. In discussing previous dependent claim 18, the Office Action (on pages 9-10) asserts that Florencio teaches the claimed picture bit counting unit in Fig. 11, element 178. The Office Action also references Florencio's col. 4, lines 9-25 when discussing features relating to calculating the fullness of the

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buffer in a video encoder using the found target bit amount. However, Florencio does not teach or suggest the features of independent claim 1 missing from the other applied references.

Florencio does not calculate a bit amount encoded substantiated for each picture in the video bit stream that is inputted to the video decoder and to be encoded currently. The Office Action citations do not teach or suggest calculating a bit amount and/or calculating a bit amount based on a bit stream that is inputted to the video decoder and to be encoded currently. Rather, the cited sections of Florencio merely relate to decoding segments of a video stream, inserting a logo into the video stream and subsequently re-encoding the segments. There is no suggestion of calculating the bit amount in a bit stream that is inputted to the video decoder (and to be encoded currently). Furthermore, Florencio has no suggestion of determining a fullness of a buffer. Rather, the cited section merely relates to storing a segment within a temporary buffer. There is no suggestion for determining a fullness of a buffer in the video encoder using a calculated bit amount and/or a target bit number. For at least the reasons set forth above, independent claim 1 defines patentable subject matter.

Independent claim 30 recites a video pre-processing unit carries out a down-sampling through a frame based processing if the data decoded in the video decoder is a field picture structure having a sequential scanning sequence or an interlacing sequence. Independent claim 30 also recites a bit rate control unit to control a quantization of the video encoder by calculating a bit amount among the bit stream to be decoded currently by the video decoder and the bit rate control unit to determine a fullness of a buffer in the video encoder based on the calculated bit amount. Independent claim 30 also recites the bit rate control unit includes a picture bit counting

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unit to calculate the bit amount encoded substantially for each picture in the bit stream that is inputted to the video decoder and to be encoded currently and the picture bit counting unit to calculate the fullness of the buffer in the video encoder using a target bit number, wherein the target bit number for a picture to be encoded is based on the calculated bit amount calculated by the picture bit counting unit and the video bit stream that is variable-length-coded in the video encoder. For at least similar reasons as set forth above, the applied references do not teach or suggest at least these features of independent claim 30. Thus, independent claim 30 defines patentable subject matter.

Independent claim 42 recites a video pre-processing unit to perform a down-sampling using a frame based processing when the data decoded in the video decoder corresponds to a field picture structure. Independent claim 42 also recites a bit rate control unit to control the video encoder by calculating a bit amount encoded by every picture among the bit stream to be decoded currently by the video decoder and the bit rate control unit to determine a fullness of the video encoder based on the calculated bit amount, wherein the bit rate control unit includes a picture bit counting unit to calculate the bit amount encoded substantially for each picture in the bit stream that is inputted to the video decoder and is to be encoded currently, wherein the fullness of the buffer in the video encoder is calculated using a target bit number. Independent claim 42 also recites the target bit number for a picture to be encoded is based on the bit amount calculated by the picture bit counting unit and the bit stream that is variable-length-coded in the video encoder. For at least similar reasons as set forth above, the applied references do not

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teach or suggest at least these features of independent claim 42. Thus, independent claim 42 defines patentable subject matter.

Independent claim 49 recites a video pre-processing unit to down-sample data using a frame based processing when the data decoded in the video decoder is a sequential scanning sequence or an interlacing sequence having a field picture structure. Independent claim 49 also recites a bit rate control unit to control the video encoder by calculating a bit amount of the bit stream to be decoded by the video decoder and the bit rate control unit to determine a fullness of the video encoder based on the calculated bit amount and a target bit number. Independent claim 49 also recites the bit rate control unit includes a picture bit counting unit to calculate the bit amount encoded substantially for each picture in the bit stream that is inputted to the video decoder and to be encoded currently, wherein the target bit number for a picture to be encoded is based on the bit amount calculated by the picture bit counting unit and the bit stream that is variable-length-coded in the video encoder. For at least similar reasons as set forth above, the applied references do not teach or suggest at least these features of independent claim 49. Thus, independent claim 49 defines patentable subject matter.

For at least the reasons set forth above, each of independent claims 1, 30, 42 and 49 define patentable subject matter. Each of the dependent claims depends from one of the independent claims and therefore defines patentable subject matter at least for this reason. In addition, the dependent claims recite features that further and independently distinguish over the applied references.

Serial No. **10/034,380**

Docket No. **K-0387**

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CONCLUSION

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Favorable consideration and prompt allowance of claims 1, 3-22, 30, 32-42 and 45-50 are earnestly solicited. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,
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